**IN THE CLAIMS:**

1. (Previously presented) A system for monitoring link delays and faults in an IP network, comprising:

a monitoring station identifier that computes a set of monitoring stations that covers links in at least a portion of said network; and

a probe message identifier, coupled to said monitoring station identifier, that computes a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults in specific links spanning said set of monitoring stations can be determined.

2. (Original) The system as recited in Claim 1 wherein said set of monitoring stations is a minimal set.

3. (Original) The system as recited in Claim 1 wherein said set of probe messages is a minimal set.

4. (Original) The system as recited in Claim 1 wherein said set of monitoring stations covers links in an entirety of said network.

5. (Original) The system as recited in Claim 1 wherein said probe messages have a selected one of:

identical message costs, and

message costs that are based on a number of hops to be made by said probe messages.

6. (Previously presented) A system for monitoring link delays and faults in an IP network, comprising:

a monitoring station identifier that computes a set of monitoring stations that covers links in at least a portion of said network; and

a probe message identifier, coupled to said monitoring station identifier, that employs polynomial-time approximation to compute a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined.

7. (Previously presented) The system as recited in Claim 6 wherein said probe message identifier employs polynomial-time approximation algorithms to compute said set of probe messages.

8. (Previously presented) A method of monitoring link delays and faults in an IP network, comprising:

computing a set of monitoring stations that covers links in at least a portion of said network; and

computing a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults in specific links spanning said set of monitoring stations can be determined.

9. (Original) The method as recited in Claim 8 wherein said set of monitoring stations is a minimal set.

10. (Original) The method as recited in Claim 8 wherein said set of probe messages is a minimal set.

11. (Original) The method as recited in Claim 8 wherein said set of monitoring stations covers links in an entirety of said network.

12. (Original) The method as recited in Claim 8 wherein said probe messages have a selected one of:

identical message costs, and message costs that are based on a number of hops to be made by said probe messages.

13. (Previously presented) A method of monitoring link delays and faults in an IP network, comprising:

computing a set of monitoring stations that covers links in at least a portion of said

network; and

computing a set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined, wherein said computing a set of monitoring stations comprises employing polynomial-time approximation algorithms.

14. (Previously presented) The method as recited in Claim 13, wherein said computing a set of probe messages comprises employing polynomial-time approximation algorithms.

15. (Original) A system for monitoring link delays and faults in an IP network, comprising:

a monitoring station identifier that employs polynomial-time approximation algorithms to compute a minimal set of monitoring stations that covers links in at least a portion of said network; and

a probe message identifier, coupled to said monitoring station identifier, that employs polynomial-time approximation algorithms to compute a minimal set of probe messages to be transmitted by at least ones of said set of monitoring stations such that said delays and faults can be determined.

16. (Original) The system as recited in Claim 15 wherein said set of monitoring stations covers links in an entirety of said network.

17. (Original) The system as recited in Claim 15 wherein said probe messages have a selected one of:

identical message costs, and

message costs that are based on a number of hops to be made by said probe messages.

18. (Original) The system as recited in Claim 15 wherein said minimal set of monitoring stations guarantees delay and fault monitoring of all active links in a presence of at most $K$-1 failures.

19. (Original) The system as recited in Claim 15 wherein said minimal set of monitoring stations always covers said links in said at least said portion of said network.